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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,929	02/23/2004	Shinji Takeda	249205US8	7680

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EXAMINER	
KARIKARI, KWASI	
ART UNIT	**PAPER NUMBER**
2617	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/18/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/18/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/782,929	TAKEDA ET AL.	
	Examiner	Art Unit	
	Kwasi Karikari	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on 22 January 2007.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1 and 3-22 is/are pending in the application.

4a) Of the above claim(s) 2 canceled is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1 and 3-22 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2617.

2. Claim 2 has been cancelled.

Response to Arguments

3. Applicant's arguments with respect to claims 1 and 3-22 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

4. Claims 3-8,10-18 and 20-22 are objected to because of the following informalities:

Applicant uses “A radio control station”, “A radio station” and “A multi-hop” in claims 3-8,10-18 and 20-22. The Examiner suggests using “The radio control station”, “The radio station” and “The multi-hop” as making reference to the previously cited claimed limitations in claims 1, 9 and 19. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 3-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Palenius (U.S. 6,904,290), (hereinafter Palenius) in view of Cerwall et al. (U.S. 20040018843), (hereinafter Cerwall) and further in view of Soliman (U.S. 20040085909), (hereinafter Soliman).

Regarding claims 1, 9 and 19, Palenius discloses a communication system (see Fig. 2) configured by a radio control station connected to a core network (BS,RNC,MSC and PSTN connections) and a plurality of radio stations for relaying signals there between (= interaction between MS 110 and BS 100, see col. 4, lines 15-26; and col. 4, lines 45-55) wherein, the radio control station (BS 100 in communication with RNC and MSC, see col. 4, lines 45-55) comprises:

a control signal transmission/reception unit (= communication between MS 110 and BS 100, see col. 4, lines 22-55) configured to transmit/receive a control signal (= DPCCH carries user control information, see col. 2, lines 46-56) having a lower bit rate than an information signal (= DPDCH carries user bits, see col. 2, lines 46-56) and

for conducting communication with the plurality of radio station stations (= DPDCH and DPCCH transmit at different power levels, see col. 3, lines 1-7; and internet connection may require more downlink bandwidth than uplink bandwidth, see col. 4, lines 32-52);

an information signal transmission/reception unit configured to transmit/receive [an]] the information signal (= communication between MS 110 and BS 100, see col. 4, lines 22-55; and DPDCH carries user bits, see col. 2, lines 46-56);

the radio station comprises: a control signal (DPCCH) transmission/reception unit configured to transmit/receive the control signal; and an information signal (DPDCH) transmission/reception unit configured to transmit/receive the information signal (= communication between MS 110 and BS 100, see col. 4, lines 22-55; DPDCH carries user bits, see col. 2, lines 46-56; and DPCCH carries user control information, see col. 2, lines 46-56) and an independent control signal and information signal communication route through the communication system (= dedicated data and control channels; DPDCH and DPCCH); but fails to teach a communication route determiner configured to determine a communication route prior to conducting communication with the plurality of radio stations in a multi-hop system.

However, Cerwall teaches a communication route determiner configured to determine a communication route prior to conducting communication with the plurality of radio stations (see Pars. 0033, 0042-43 and 0048).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Cerwall with the system of Palenius for the benefit of achieving

a resource allocation system whereby interference prediction in a radio connection increases the performance of a mobile system (see Cerwall; Pars. 0006-9).

The combination of Palenius and Cerwall fails specifically to mention that the communication system is a multi-hop system.

However, Soliman teaches a multi-hop network (see Pars. 0052-53 and Figs. 10 & 11).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Soliman with the systems of Palenius and Cerwall for the benefit of achieving an ad-hoc system wherein usage patterns are use to determine source-to-destination paths (see Soliman; Abstract).

Regarding claim 3, as recited in claim 1, Palenius discloses a radio control station (communication between BS 100, RNC and MSC) connected to a core network (= BS,RNC,MSC and PSTN connections, see col. 4, lines 22-55) for controlling communication by a radio station that relays a signals transmitted by other radio stations, comprising:

a control signal transmission/reception unit configured to transmit/receive a control signal having a lower bit rate than an information signal and for conducting communication with the radio station (= DPDCH and DPCCH transmit at different power levels, see col. 3, lines 1-7; and internet connection may require more downlink bandwidth than uplink bandwidth, see col. 4, lines 32-52;

an information signal transmission/reception unit configured to transmit/receive the information signal (= communication between MS 110 and BS 100, see col. 4, lines 22-55; DPDCH carries user bits, see col. 2, lines 46-56; and DPCCH carries user control information, see col. 2, lines 46-56) and an independent control signal and information signal communication route through the communication system (= dedicated data and control channels; DPDCH and DPCCH); but fails to teach a communication route determiner configured to determine a communication route prior to conducting communication with the plurality of radio stations.

However, Cerwall teaches a communication route determiner configured to determine a communication route prior to conducting communication with the plurality of radio stations (see Pars. 0033, 0042-43 and 0048).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Cerwall with the system of Palenius and Soliman for the benefit of achieving a resource allocation system whereby interference prediction in a radio connection increases the performance of a mobile system (see Cerwall; Pars. 0006-9).

Regarding claim 4, as the combination of Palenius, Cerwall and Soliman is made of in claim 3, Palenius further discloses a radio control station according to claim 3,the communication route determiner determines a communication route through the multi-hop communication system for the information **"signal by a different independent process"** (dedicated data and control channels; DPDCH and DPCCH, see col. 4, lines

15-44) from the determination of the communication route through the multi-hop communication system for the control signal.

Regarding claim 5, as the combination of Palenius, Cerwall and Soliman is made in claim 3, Cerwall discloses a radio control station, the communication route determiner transmits a communication route acquisition request to the radio station for acquisition of a communication route, and the communication route determiner determines a communication route based on a response to the communication route acquisition request transmitted by the radio station (see Pars. 0042 and 0045-48).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Cerwall with the system of Palenius and Soliman for the benefit of achieving a resource allocation system whereby interference prediction in a radio connection increases the performance of a mobile system (see Cerwall; Pars. 0006-9).

Regarding claim 6, as the combination of Palenius, Cerwall and Soliman is made in claim 3, Cerwall discloses that a radio control station, further comprising; a communication channel controller configured to transmit a usage notification that indicates usage of a communication channel handled by the radio control station (see Pars. 0030, 0043 and 0048).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Cerwall with the system of Palenius and Soliman for the benefit

of achieving a resource allocation system whereby interference prediction in a radio connection increases the performance of a mobile system (see Cerwall; Pars. 0006-9).

Regarding claim 7, as the combination of Palenius, Cerwall and Soliman is made in claim 3, Cerwall discloses that in a radio control station, the communication route determiner determines a communication route to the radio station and transmits a communication route determination notification that notifies the communication route to a radio station located on the communication route.
(see Pars. 0028-30 and 0033).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Cerwall with the system of Palenius and Soliman for the benefit of achieving a resource allocation system whereby interference prediction in a radio connection increases the performance of a mobile system (see Cerwall; Pars. 0006-9).

Regarding claim 8, as the combination of Palenius, Cerwall and Soliman is made in claim 3, Cerwall discloses that in a radio control station, the communication route determiner **assigns a communication channel** to be used in the radio station located on the determined communication route (see Pars. 0028-30 and 0033).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Cerwall with the system of Palenius and Soliman for the benefit of achieving a resource allocation system whereby interference prediction in a radio connection increases the performance of a mobile system (see Cerwall; Pars. 0006-9).

Regarding claim 10, as the combination of Palenius, Cerwall and Soliman is made in claim 9, Cerwall discloses that in a radio station, the communication route determiner transmits a **usage inquiry** to the radio station for inquiring usage of a communication channel handled by the radio control station and transmits/receives the information signal according to **a usage notification** that is a response to the usage inquiry (see Pars. 0028-30, 0033 and 0042-43).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Cerwall with the system of Palenius and Soliman for the benefit of achieving a resource allocation system whereby interference prediction in a radio connection increases the performance of a mobile system (see Cerwall; Pars. 0006-9).

Regarding claim 11, as the combination of Palenius, Cerwall and Soliman is made in claim 9, Cerwall discloses that in a radio station, further comprising: a decision unit configured to decide whether or not communication is directly conducted with the radio control station based on a reception level of the control signal received by the control signal transmission/reception unit (see Pars. 0031-33 and 0042-43).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Cerwall with the system of Palenius and Soliman for the benefit of achieving a resource allocation system whereby interference prediction in a radio connection increases the performance of a mobile system (see Cerwall; Pars. 0006-9).

Regarding claim 12, as recited in claim 11, Palenius further discloses that the decision unit changes a threshold for the reception level according to a transmission speed of the information signal and to decide whether or not communication is directly conducted with the radio control station based on a result of comparison of the reception level and the threshold (see col. 1, lines 27-55 col. 3, lines 41-58 and col. 4, lines 32-55).

Regarding claim 13, as the combination of Palenius, Cerwall and Soliman is made in claim 9, Soliman discloses that a radio station further comprising; a first relay controller configured to transmit a relay control signal to other station for requesting a relay of the information signal and to set a communication route to the radio control station via the other station according to a response relay control signal that is a response to the relay control signal (see Pars. 0052-56).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Soliman with the systems of Palenius and Cerwall for the benefit of achieving an ad-hoc system wherein usage patterns are use to determine source-to-destination paths (see Soliman; Abstract).

Regarding claim 14, as the combination of Palenius, Cerwall and Soliman is made in claim 13, Soliman discloses that a radio station further comprising; a communication route selector configured to select a radio station satisfying a prescribed condition regarding a communication state if a plurality of the other radio station transmitted the response relay control signal (see Pars. 0052-56).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Soliman with the systems of Palenius and Cerwall for the benefit of achieving an ad-hoc system wherein usage patterns are use to determine source-to-destination paths (see Soliman; Abstract).

Regarding claim 15, as the combination of Palenius, Cerwall and Soliman is made in claim 9, Soliman discloses that a radio station further comprising: a second relay controller configured to receive a relay control signal requesting a relay of the information signal from other station, to transmit a response relay control signal that is a response to the relay control signal and to set a communication route from the other radio station to the radio control station (see Pars. 0052-56).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Soliman with the systems of Palenius and Cerwall for the benefit of achieving an ad-hoc system wherein usage patterns are use to determine source-to-destination paths (see Soliman; Abstract).

Regarding claim 16, as the combination of Palenius, Cerwall and Soliman is made in claim 9, Soliman discloses that the second relay controller transmits the response relay control signal notifying ability of the relay of the information signal based on a reception level of the received response relay control signal (see Pars. 0052-56).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Soliman with the systems of Palenius and Cerwall for the

benefit of achieving an ad-hoc system wherein usage patterns are use to determine source-to-destination paths (see Soliman; Abstract).

Regarding claim 17, as the combination of Palenius, Cerwall and Soliman is made in claim 14, Soliman discloses, wherein an information indicating a number of hops from the other radio station to the radio control station is included in the response relay control signal, and the communication route selector selects a radio station based the number of hops included in the response relay control signal (see Pars. 0052-56).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Soliman with the systems of Palenius and Cerwall for the benefit of achieving an ad-hoc system wherein usage patterns are use to determine source-to-destination paths (see Soliman; Abstract).

Regarding claim 18, as the combination of Palenius, Cerwall and Soliman is made in claim 14, Soliman discloses, wherein an information indicating an interference level is included in the response relay control signal, and the communication route selector selects a radio station based the interference level included in the response relay control signal (see Pars. 0052-56).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Soliman with the systems of Palenius and Cerwall for the benefit of achieving an ad-hoc system wherein usage patterns are use to determine source-to-destination paths (see Soliman; Abstract).

Regarding claim 20, as the combination of Palenius, Cerwall and Soliman is made in claim 1, Cerwall discloses that the communication route determiner determines whether or not the communication route for the information signal can be set based on a reception level of the control signal (see Pars. 0028 and 0031-33).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Cerwall with the system of Palenius and Soliman for the benefit of achieving a resource allocation system whereby interference prediction in a radio connection increases the performance of a mobile system (see Cerwall; Pars. 0006-9).

Regarding claim 21, as the combination of Palenius, Cerwall and Soliman is made in claim 3, Cerwall discloses that the communication route determiner determines whether or not the communication route for the information signal can be set based on a reception level of the control signal (see Pars. 0028 and 0031-33).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Cerwall with the system of Palenius and Soliman for the benefit of achieving a resource allocation system whereby interference prediction in a radio connection increases the performance of a mobile system (see Cerwall; Pars. 0006-9).

Regarding claim 22, as the combination of Palenius, Cerwall and Soliman is made in claim 19, Cerwall discloses that the communication route determiner determines whether or not the communication route for the information signal can be set based on a reception level of the control signal (see Pars. 0028 and 0031-33).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Cerwall with the system of Palenius and Soliman for the benefit of achieving a resource allocation system whereby interference prediction in a radio connection increases the performance of a mobile system (see Cerwall; Pars. 0006-9).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwasi Karikari whose telephone number is 571-272-8566. The examiner can normally be reached on M-F (8 am - 4pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8566. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kwasi Karikari
Patent Examiner.
04/09/2007

JOSEPH FEILD
SUPERVISORY PATENT EXAMINER